

**ITMAT 18th Annual International Symposium  
Monday and Tuesday, October 9-10, 2023  
Perelman School of Medicine, University of Pennsylvania  
Smilow Center for Translational Research (SCTR)  
The Arthur H. Rubenstein Auditorium  
3400 Civic Center Boulevard, Philadelphia, PA**

**Origins, Emergence, Prediction and Perception of Disease: A Quantum of Solace**

**Monday, October 9 (Day 1)**

8:20

***Introduction***

Garret A. FitzGerald, MD, FRS, Director, Institute for Translational Medicine and Therapeutics, McNeil Professor in Translational Medicine and Therapeutics, Perelman School of Medicine, University of Pennsylvania

***Session 1: Genetic Origins, Patterns and Prediction of Disease***

***Chairs:*** Daniel J. Rader, MD, Seymour Gray Professor of Molecular Medicine, Chair of the Department of Genetics, Chief of the Division of Translational Medicine and Human Genetics in the Department of Medicine, Associate Director of the Institute for Translational Medicine and Therapeutics, co-director of the Penn Medicine Biobank, Perelman School of Medicine, University of Pennsylvania and Marylyn D. Ritchie, Ph.D., Director, Center for Translational Bioinformatics and Associate Director, Penn Center for Precision Medicine, University of Pennsylvania

8:30

***Climate Change, Past Epidemics, and Building an Equitable, Sustainable Future***

Gwen Robbins Schug, PhD, Professor of Biology, University of North Carolina Greensboro

9:00

***Tracking a killer: using ancient DNA to understand the evolutionary history of tuberculosis***

Anne Stone, PhD, Regents' Professor, Arizona State University

9:30

***Exploring evolutionary immunogenomics: Lessons from our ancestors and past pandemics***

Luis Barreiro, PhD, Professor, Section of Genetic Medicine, The University of Chicago

10:00

***Coffee Break***

***Chairs:*** Mark Kahn, MD, Edward S. Cooper, M.D./Norman Roosevelt and Elizabeth Meriwether McLure Professor, Perelman School of Medicine, University of Pennsylvania and Katherine L. Nathanson, MD, Pearl Bassar

Professor for BRCA-Related Research, Deputy Director of the Abramson Cancer Center, Perelman School of Medicine, University of Pennsylvania

10:30 ***Impact of African evolutionary history on complex cardiometabolic traits***  
Sarah Tishkoff, PhD, David and Lyn Silfen University Professor, Department of Genetics and Biology, Perelman School of Medicine, University of Pennsylvania

11:00 ***Genetic and phenotypic associations with clonal hematopoiesis phenotypes***  
Michael D. Kessler, PhD, Manager, Statistical Genetics, Statistical Ophthalmology and Oncology Team, Analytical Genetics and Data Science Group, Regeneron Genetics Center, Regeneron Pharmaceuticals, Inc.

11:30 ***AI for recognizing phenotypes in large biobanks***  
Russ B. Altman, MD, PhD, Kenneth Fong Professor of Bioengineering, Genetics, Medicine, and Biomedical Data Science and, by courtesy, Computer Science Stanford University

12:00 ***Lunch***

***Session 2: Perception of Pain and Its Consequences***

***Chairs:*** Veena Graff, MD, MS, Assistant Professor of Clinical Anesthesiology and Critical Care, Perelman School of Medicine, University of Pennsylvania and Katherine N. Theken, PharmD, PhD, Assistant Professor, Department of Oral and Maxillofacial Surgery/Pharmacology, School of Dental Medicine, University of Pennsylvania

1:00 ***Tumor-innervating neurons tune cancer immunity***  
Sebastien Talbot, PhD, Tenured Associate Professor, Department of Biomedical and Molecular Sciences and Department of Biomedical and Molecular Sciences, Queen's University, Group Leader (adjunct), Department of Pharmacology and Physiology, Karolinska Institute, Canada Research Chair in Neuro-Immunology, Wallenberg Academy Fellow

1:30 ***Nociception and pain in humans lacking functional TRPV1 channel***  
Rachel Zaguri, PhD, The Hebrew University, Jerusalem, Israel

2:00 ***With positive energy: how macrophages control pain***  
Niels Eijkelkamp, PhD, Associate Professor, Group leader Neuroimmunology of Pain, University Medical Center Utrecht, Utrecht University

2:30 ***Break***

**Session 3: Genes, environment and the emergence of disease**

**Chairs:** Maja Buca, PhD, Professor of Genetics, Co-Director, Asperger Syndrome Program of Excellence, Department of Genetics, Perelman School of Medicine, University of Pennsylvania and Maayan Levy, PhD, Assistant Professor of Microbiology, Perelman School of Medicine, University of Pennsylvania

3:00 ***Toward a more global behavior genetics: The example of drug use***  
Scott Vrieze, PhD, Associate Professor, University of Minnesota

3:30 ***Microbiome and hematopoietic cell transplantation toxicities are linked by mucus***  
Robert Jenq, MD, Associate Professor, MD Anderson Cancer Center, University of Texas

4:00 ***The Role of APOE and the immune response in tau-mediated neurodegeneration***  
David M. Holtzman, MD, Barbara Burton and Reuben M. Morris III Distinguished Professor, Washington University School of Medicine, St. Louis

4:30 **Conclusion**

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6:30 **Reception and Dinner: The College of Physicians of Philadelphia**  
19 South 22<sup>nd</sup> Street, Philadelphia

*Transportation will be provided to and from the dinner. Buses will depart from the front of the Perelman Center for Advanced Medicine (circular driveway in front of building that connects to the Smilow Center for Translational Research) at 6:10PM and will return to the Hilton Inn at Penn at approximately 9:00PM.*

*Speakers and chairs may take a shuttle bus from the Hilton Inn at Penn, Walnut Street entrance, departing at 6:10PM, returning to the hotel at approximately 9:00PM.*

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**Tuesday, October 10 (Day 2)**

**Session 4: Novel Approaches, Technologies, and Resources**

**Chairs:** Arjun Raj, PhD, Professor of Genetics, University of Pennsylvania and Aalim M. Weljie, PhD, Associate Professor of Pharmacology, Perelman School of Medicine, University of Pennsylvania

- 9:00 ***Teaching cells to perform new therapeutic functions***  
Ahmad (Mo) Khalil, PhD, Professor of Biomedical Engineering, Associate Director of the Biological Design Center, Boston University
- 9:30 ***Unraveling functional tissue heterogeneity at the single cell level by Deep Visual Proteomics***  
Matthias Mann, PhD, Director at the Max Planck Institute of Biochemistry, Director of the Proteomics Program, Copenhagen University
- 10:00 ***The tumor ecosystem from initiation to spread, captured by spatially resolved transcriptomics***  
Joakim Lundeberg, PhD, Professor, Department of Gene Technology, KTH Royal Institute of Technology, Science for Life Laboratory, Stockholm, Sweden
- 10:30 ***Coffee break***
- Chairs:*** Brian Litt, MD, Perelman Professor of Neurology, Perelman School of Medicine, University of Pennsylvania and Elisabetta Manduchi, PhD, Department of Genetics, Perelman School of Medicine, University of Pennsylvania
- 11:00 ***Circadian Clock Resetting - Old Question New Insights***  
Gad Asher, MD, PhD, Professor of Biomolecular Science, Weizmann Institute of Science, Israel
- 11:30 ***Predicting gene expression from DNA sequence for noncoding variant analysis***  
David Kelley, PhD, Principal Investigator, Calico Life Sciences
- 12:00 ***Lunch Break***
- Session 5: *A Quantum of Solace; Development, Aging and Regeneration***
- Chairs:*** Emanuela Ricciotti, PharmD, PhD, Research Assistant Professor of Pharmacology, Perelman School of Medicine, University of Pennsylvania and Shaon Sengupta, MBBS, MPH, FAAP, Assistant Professor of Pediatrics, Perelman School of Medicine, University of Pennsylvania
- 1:00 ***Tour de Macrophages in Pulmonary Infections***  
Maziar Divangahi, PhD, Professor of Medicine, McGill University

- 1:30      ***Targeting senescence to improve age-related diseases***  
Makoto Nakanishi, MD, PhD, Professor and Dean, Institute of Medical Science,  
University of Tokyo
- 2:00      ***Coffee break***
- Chairs:*** Amita Sehgal, PhD, John Musser Professor of Neuroscience, Director  
Chronobiology and Sleep Institute, Perelman School of Medicine, University  
of Pennsylvania and Benjamin Franklin Voight, PhD, Associate Professor of  
Pharmacology, Director, Bioinformatics Concentration, ITMAT MSTR Program,  
Perelman School of Medicine, University of Pennsylvania
- 2:30      ***After the storm: maintaining and regenerating the respiratory system***  
Edward E. Morrisey, PhD, Professor of Medicine and Director of the Penn-CHOP  
Lung Biology Institute (LBI), University of Pennsylvania
- 3:00      ***Immunotoxin,  $\alpha$ CD40 combination immunotherapy for glioblastoma***  
Vidyalakshmi (Vidya) Chandramohan, PhD, MBA, Associate Professor, Duke  
University
- 3:30      ***The automation of solace***  
Casey Greene, PhD, Chair, Department of Biomedical Informatics, University of  
Colorado, Anschutz
- 4:00      ***Concluding Remarks***  
Garret A. FitzGerald, MD, FRS, Director, Institute for Translational Medicine and  
Therapeutics, McNeil Professor in Translational Medicine and Therapeutics,  
Perelman School of Medicine, University of Pennsylvania